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FORM PTO-1390 (REV 10-94) U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

DOCKET #: 4797-8PUS

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/486784
INTERNATIONAL APPLICATION NO PCT/DE98/01995		INTERNATIONAL FILING DATE July 16, 1998		PRIORITY DATE CLAIMED July 01, 1998

TITLE OF INVENTION

Appliance For Gasification of Carbon-Containing Fuel, Residual And Waste Materials

APPLICANT(S) FOR DO/EO/US

Ralf DONNER; Dietmar DEGENKOLB; Manfred SCHINGNITZ

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [x]This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371
3. [x]This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. [x]A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. [x]A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [x]is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [] has been transmitted by the International Bureau.
   c. [] is not required, as the application was filed in the United States Receiving Office (RO/US)
6. [x]A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. [] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [] have been transmitted by the International Bureau.
   c. [] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [] have not been made and will not be made.
8. [] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [x]An EXECUTED oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. [] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. Below concern other document(s) or information included:

11. [x]An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [x]An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [x]A **FIRST** preliminary amendment.
    [] A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. [] A substitute specification.
15. [] A change of power of attorney and/or address letter.
16. [x]Other items or information *(specify):* Int'l Search Report, PCT Notification of Receipt of Record Copy, Request for Correction, Notification of Acceptance of Correction

U.S. APPLICATION NO (If known, see 37 CFR 1.5) 09/486784	INTERNATIONAL APPLICATION NO PCT/DE98/01995	ATTORNEY'S DOCKET NUMBER 4797-8PUS

17.[x]The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):
Search Report has been prepared by the EPO or JPO **$840.00**
International preliminary examination fee paid to USPTO (37 CFR 1.482)..... **$670.00**
No international preliminary examination fee paid to USPTO (37 CFR 1.482)
but international search fee paid to USPTO (37 CFR 1.445(a)(2))..... **$760.00**
Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$970.00**
International preliminary examination fee paid to USPTO (37 CFR 1.482)
and all claims satisfied provisions of PCT Article 33(2)-(4) **$96.00**

ENTER APPROPRIATE BASIC FEE AMOUNT =				**$840**	
Surcharge of **$130.00** for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				**$**	
Claims	Number Filed	Number Extra	Rate		
Total Claims	10- 20 =	0	x **$18.00**	**$**	
Independent Claims	2 - 3 =	0	x **$78.00**	$	
Multiple dependent claim(s) (if applicable)			+ **$260.00**	**$**	
TOTAL OF ABOVE CALCULATIONS =				**$840**	
Reduction of ½ for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				**$**	
SUBTOTAL =				**$840**	
Processing fee of **$130.00** for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				**$**	
TOTAL NATIONAL FEE =				**$840**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by the appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				**$**	
TOTAL FEES ENCLOSED					**$840**
			Amount to be refunded:		**$**
			charged:		**$**

a. [x]One check in the amount of $ 840 to cover the above fees is/are enclosed.
b. [] Please charge my Deposit Account No. 03-2412 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.
c. [x]The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 03-2412. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
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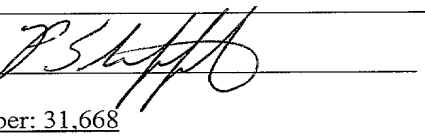

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By Express Mail # EL513859785US · March 1, 2000

Attorney Docket # 4797-8PUS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re National Phase PCT Application of

Ralf DONNER et al.

International Appln. No.: PCT/DE98/01995

International Filing Date: July 16, 1998

For: Appliance For Gasification of Carbon-Containing Fuel, Residual And Waste Materials

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231
BOX PCT

S I R:

Prior to the issuance of a first Office Action and simultaneously with the filing of the present application, please amend said application as follows:

In the Specification:

Page 1, delete line 3 and insert --Background of the Invention, Field of the Invention--;

line 6, delete "in accordance with the first patent claim and the" and insert --.--;

delete line 7 in its entirety and insert --Discussion of the Prior Art--.

Page 2, line 13, after "(" insert --see German reference--;

line 17, after "(" insert --see German reference--.

Page 4, after line 14, insert --Summary of the Invention--;

delete lines 19, 20, 21 and 22 in their entirety.

Page 5, line 11, delete "with reference to Figures" and insert --.--;

delete line 12 in its entirety and insert:

--The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of the disclosure. For a better understanding of the invention, its operating advantages, and specific objects attained by its use, reference should be had to the drawing and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

Brief Description of the Drawings

Figure shows a cross-section through a gasification reactor pursuant to the present invention; and

Figure 2 shows an enlarged segment of the gasification reactor of Figure 1.

Detailed Description of the Preferred Embodiments--.

Page 6, line 4, after "gap" insert --5--;

line 10, delete "its" and insert --the--;

line 10, after "surface" insert --of the wall 4--;

line 15, after "as" insert --a--;

line 20, delete "coating" and insert --protective layer--;

line 22, delete "10".

Page 7, line 6, delete "10";

after line 27, insert --The invention is not limited by the embodiments described above which are presented as examples only but can be modified in various ways within the scope of protection defined by the appended patent claims.--.

Delete page 8 in its entirety.

In the Claims:

Please cancel claims 1-5, and add the following new claims:

--6. An appliance for gasification of carbon- and ash-containing fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above a melting point of inorganic fractions and at pressures between atmospheric pressure and 80 bar, comprising a reaction chamber designed as an entrained-bed reactor, the reaction chamber having a contour delimited by a cooled reactor wall of the following structure, from the outside inward:

a pressure shell;

a cooling wall;

a water-cooled cooling gap between the pressure shell and the cooling wall;

a ceramic protection for the cooling wall; and

a layer of slag, pressure and temperature of the cooling gap between the pressure shell and the cooling wall being controllable so that the reactor can be operated above and below a boiling point of cooling water, pressure in the cooling gap being higher than pressure in the gasification chamber.

7. An appliance for gasification of carbon-containing, ash-free fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above 850°C and at pressures between atmospheric pressure and 80 bar, comprising a reaction chamber designed as an entrained-bed reactor having a contour delimited by a cooled reactor wall of the following structure, from the outside inward:

a pressure shell,

a cooling wall,

a water-cooled gap between the pressure shell and the cooling wall;

a ceramic protection for the cooling wall, and

a refractory lining, the cooling gap between the pressure shell and the cooling wall being operable, with a filling of pressurized water, above or below a boiling

point of the cooling water, pressure in the cooling gap being higher than pressure in the gasification chamber.

8. An appliance as defined in claim 6, wherein the cooling wall comprises half-tubes which are welded together in a gastight manner, are pinned and are coated with a thin layer of ceramic mass with a high thermal conductivity.

9. An appliance as defined in claim 7, wherein the cooling wall comprises half-tubes which are welded together in a gastight manner, are pinned and are coated with a thin layer of ceramic mass with a high thermal conductivity.

10. An appliance as defined in claim 8, wherein the thin layer of ceramic mass is a flame-sprayed layer on the cooling wall.

11. An appliance as defined in claim 9, wherein the thin layer of ceramic mass is a flame-sprayed layer on the cooling wall.

12. An appliance as defined in claim 6, wherein the cooling wall has geometric shapes.

13. An appliance as defined in claim 7, wherein the cooling wall has geometric shapes.

14. An appliance as defined in claim 6, wherein the cooling wall is one of trapezium-shaped, triangular, rectangular, of undulating form and of smooth form.

15. An appliance as defined in claim 7, wherein the cooling wall is one of trapezium-shaped, triangular, rectangular, of undulating form and of smooth form.--

In the Abstract:

Delete the present abstract in its entirety and insert the following therefore:

--An appliance for the gasification of carbon- and ash-containing fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic fractions, in a reaction chamber which is designed as an entrained-bed reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall. The cooled reactor wall having the following structure, from the outside inward: a pressure shell, a cooling wall, a water-cooled gap between the pressure shell 3 and the cooling wall, a ceramic protection for the cooling wall, and a layer of slag.

The pressure and temperature of the cooling gap between the pressure shell and the cooling wall is controlled in such a way that it can be operated above and below the boiling point of the cooling water. The pressure in the cooling gap is higher than the pressure in the gasification chamber.--

Delete page 13 in its entirety.

REMARKS

The present amendment is being submitted prior to the issuance of a first Office Action and simultaneously with the filing of the present application.

With this amendment applicants have amended the specification, cancelled claims 1-5 and added new claims 6-15, all in an effort to place the application in better condition for examination.

Favorable action on the present application is respectfully requested.

Any additional fees or charges required at this time in connection with the application may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
COHEN, PONTANI, LIEBERMAN & PAVANE

By: _____

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1 March 2000

2 pcts.

Appliance for gasification of carbon-containing fuel, residual and waste materials

Description

The invention relates to an appliance for gasification of carbon-containing fuel, residual and waste materials in accordance with the first patent claim and the second patent claim.

Fuel and waste materials are to be understood as meaning those with or without an ash content, such as brown or hard coals and their cokes, water/coal suspensions, but also oils, tars and slurries, as well as residues or wastes from chemical and wood pulping processes, such as for example black liquor from the Kraft process, as well as solid and liquid fractions from the waste management and recycling industry, such as used oils, PCB-containing oils, plastic and domestic refuse fractions or their processing products, lightweight shredded material from the processing of automotive, cable and electronics scrap, and contaminated aqueous solutions and gases. The invention can be used not only for entrained-bed gasifiers, but also for other gasification systems, such as fixed-bed or fluidized-bed gasifiers or combinations thereof.

The autothermal entrained-bed gasification of solid, liquid and gaseous fuel materials has been known for many years in the field of gas generation. The ratio of fuel to

oxygen-containing gasification agents is selected in such a way that, for reasons of quality of the synthesis gas, higher carbon compounds are cleaved completely to form synthesis-gas components, such as CO and H_2, and the inorganic constituents are discharged in the form of a molten liquid (J. Carl, P. Fritz, NOELL-KONVERSIONSVERFAHREN [NOELL CONVERSION PROCESS], EF-Verlag für Energie- und Umwelttechnik GmbH, Berlin, 1996, p. 33 and p. 73).

Using various systems which have gained acceptance in the prior art, gasification gas and the molten liquid inorganic fraction, e.g. slag, can be discharged from the reaction chamber of the gasification appliance separately or together (DE 19718131.7).

Both systems which are provided with a refractory lining or cooled systems have been introduced for internally delimiting the reaction chamber of the gasification system (DE 4446803 A1).

Gasification systems which are provided with a refractory lining have the advantage of low heat losses and therefore offer an energy-efficient conversion of the fuel materials supplied. However, they can only be used for ash-free fuel materials, since the liquid slag which flows off the inner surface of the reaction chamber during the entrained-bed gasification dissolves the refractory lining and therefore only allows very limited operating times to be achieved before an expensive refit is required.

In order to eliminate this drawback which is encountered with ash-containing fuel materials, cooled systems working on the principle of a diaphragm wall have therefore been provided. The cooling initially results in the formation of a solid layer of slag on the surface facing the reaction chamber, the thickness of which layer increases until the further slag ejected from the gasification chamber runs down this wall in liquid form and flows out of the reaction chamber, for example together with the gasification gas. Such systems are extremely robust and guarantee long operating times. A significant drawback of such systems consists in the fact that up to approx. 5% of the energy introduced is transferred to the cooled screen.

Various fuel and waste materials, such as for example heavy-metal- or light-ash-containing oils, tars or tar-oil solid slurries contain too little ash to form a sufficiently protective layer of slag with cold reactor walls, resulting in additional energy losses, yet on the other hand the ash content is too high to prevent the refractory layer from melting away or being dissolved if reactors with a refractory lining were to be used and to allow sufficiently long operating times to be achieved before a refit is required.

A further drawback is the complicated structure of the reactor wall, which may lead to considerable problems during production and in operation.

For example, the reactor wall of the entrained-bed gasifier shown in J. Carl, P. Fritz: NOELL-

KONVERSIONSVERFAHREN [NOELL CONVERSION PROCESS], EF-Verlag für Energie- und Umwelttechnik GmbH, Berlin, 1996, p. 33 and p. 73 comprises an unpressurized water shell, the pressure shell, which is protected against corrosion on the inside by a tar/epoxy resin mixture and is lined with lightweight refractory concrete, and the cooling screen, which, in the same way as a diaphragm wall which is conventionally used in the construction of boilers, comprises cooling tubes which are welded together in a gastight manner, through which water flows, which are pinned and which are coated with a thin layer of SiC. Between the cooling screen and the pressure shell, which is lined with refractory concrete, there is a cooling-screen gap which has to be purged with a dry, oxygen-free gas in order to prevent flow-back and condensation.

Working on the basis of this prior art, the object of the invention is to provide an appliance which, while being simple and reliable to operate, is able to cope with a very wide range of ash contents in the fuel and waste materials.

This object is achieved by means of the features of the claims 1 and 2.

A further configuration of the appliance according to the invention is given in the later claims.

The appliance according to the invention is suitable for the gasification of fuel, waste and residual materials with a very wide range of ash contents, and for the combined gasification of hydrocarbon-containing gases, liquids and solids.

According to the invention, the contour of the reaction chamber for the gasification process is delimited by a refractory lining or by a layer of solidified slag. If the reaction chamber is lined with refractory material, intensive cooling protects this material or causes liquid slag to solidify, so that a thermally insulating layer is formed. The cooling is provided by a water-filled cooling gap, it being possible to set operating conditions above or below the boiling point.

The invention will be explained in more detail on the basis of two exemplary embodiments with reference to Figures 1 and 2.

In the first exemplary embodiment, Figure 1 shows the gasification reactor. The conversion of the fuel, residual and waste materials using the oxygen-containing oxidizing agent to form a crude gas containing high levels of H_2 and CO takes place in the reaction chamber 1. The gasification media are supplied by means of special burners which are attached to the burner flange 2. The crude gasification gas, if appropriate together with liquid slag, leaves the reaction chamber 1 via the opening 8, which is provided with a special appliance, and passes to downstream cooling, scrubbing and processing systems. The gasification reactor is surrounded by the pressure shell 3, which absorbs the difference in pressure between the reaction chamber 1 and the outside atmosphere. For its thermal protection, there is a cooling gap 5 which, filled with water, can be operated above or

below the boiling point, which depends on the overall pressure. To prevent gasification gas from entering the cooling gap 5 in the event of damage, the pressure of this gap is always maintained at a higher level than the pressure in the reaction chamber 1. On the inside, the cooling gap 5 is delimited by a cooling wall 4. The hot water or steam generated in the cooling gap 5 is discharged via the connection piece 9. The cooling wall 4 may be provided with a thin, ceramic protective layer 6 which is fixedly bonded to its surface. Depending on the process pressure, the temperatures in the cooling gap 5 may be between 50 and 350°C. In the case of gasification of starting materials which contain very little or no ash, it is advantageous to line the cooling wall 4 with refractory, thermally insulating brickwork as refractory lining 7 in order to limit the introduction of heat into the cooling gap 5. If ash-containing fuel, residual and waste materials are used, it is possible to dispense with the refractory brickwork 7. The liquid slag which forms in the reaction chamber 1 is cooled on the cold surface of the cooling wall 4 and its coating 6, solidifies and in this way forms a refractory lining as a layer of slag 10 which grows toward the reaction chamber 1 until the temperature has reached the melting point of the slag. The further slag which is then ejected runs off as a film of slag and is discharged together with the hot crude gas via the opening 8.

Figure 2 shows one example of the design of the cooling wall 4. In this case, this wall comprises a wall made from half-tubes which have been welded together in a gastight manner, are pinned and are combined with a thin layer of silicon carbide. The ceramic lining is situated on the side facing toward the reaction chamber 1, as a layer of slag 10 which, as shown in Example 1, is applied artificially or forms naturally through its own molten ash. Other forms of the cooling wall, such as for example a wall made from corrugated sheet metal, in the shape of a trapezium, triangle or rectangle, are possible depending on the production techniques employed. The ceramic protection 6 may be applied and secured by mechanical holding means, as in Example 2, or by chemical bonding or thermal application, such as by flame spraying.

Furthermore, it will be readily understood that the design of the wall which delimits the reaction chamber 1, including parts 3, 4, 5, 6 and 7, which is explained in Example 2, can be used not only for the entrained-bed gasification reactors, which are subject to high thermal loads, but also for other gasification systems, such as for example fixed-bed or fluidized-bed gasifiers or combinations thereof.

List of reference numerals used

1 Reaction chamber

2 Flange for burner fitting

3 Pressure shell

4 Cooling wall

5 Cooling gap

6 Ceramic protection for the cooling wall

7 Refractory lining of the reactor

8 Opening for the gas and slag outlet member

9 Connection piece for steam or hot water

10 Layer of slag

Patent claims

1. An appliance for the gasification of carbon- and ash-containing fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic fractions, in a reaction chamber which is designed as an entrained-bed reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall of the following structure, from the outside inward:

- pressure shell (3)
- cooling wall (4)
- water-cooled cooling gap (5) between pressure shell (3) and cooling wall (4)
- ceramic protection (6) for the cooling wall (4)
- layer of slag (10)

and the pressure and temperature of the cooling gap (5) between pressure shell (3) and cooling wall (4) being controlled in such a way that it can be operated above and below the boiling point of the cooling water, the pressure in the cooling gap being higher than the pressure in the gasification chamber.

2. An appliance for gasification of carbon-containing, ash-free fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above 850°C, in a reaction chamber which is designed as an entrained-bed

reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall of the following structure, from the outside inward:

- pressure shell (3)
- cooling wall (4)
- water-cooled gap (5) between pressure shell (3) and cooling wall (4)
- ceramic protection (6) for the cooling wall (4)
- refractory lining (7)

and it being possible for the cooling gap (5) between the pressure shell (3) and cooling wall (4) to be operated, with a filling of pressurized water, above or below the boiling point of the cooling water, the pressure in the cooling gap (5) being higher than the pressure in the gasification chamber (1).

3. The appliance as claimed in claims 1 and 2, in which the cooling wall (4) comprises half-tubes which have been welded together in a gastight manner, are pinned and are coated with a thin layer of ceramic mass with a high thermal conductivity.

4. The appliance as claimed in claims 1 and 2, in which the thin layer of ceramic mass is applied to the cooling wall (4) by flame spraying.

5. The appliance as claimed in claims 1 to 4, in which the cooling wall (4) may be of geometric shapes, such as

trapezium-shaped, triangular, rectangular, of undulating or smooth form.

Abstract

The invention relates to an appliance for the gasification of carbon- and ash-containing fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic fractions, in a reaction chamber which is designed as an entrained-bed reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall of the following structure, from the outside inward:

- pressure shell 3
- cooling wall 4
- water-cooled gap 5 between pressure shell 3 and cooling wall 4
- ceramic protection 6 for the cooling wall 4
- layer of slag 10

and the pressure and temperature of the cooling gap 5 between pressure shell 3 and cooling wall 4 being controlled in such a way that it can be operated above and below the boiling point of the cooling water, the pressure in the cooling gap 5 being higher than the pressure in the gasification chamber 1. (Fig. 1)

Key to figures:

Figur → Figure

Figure1

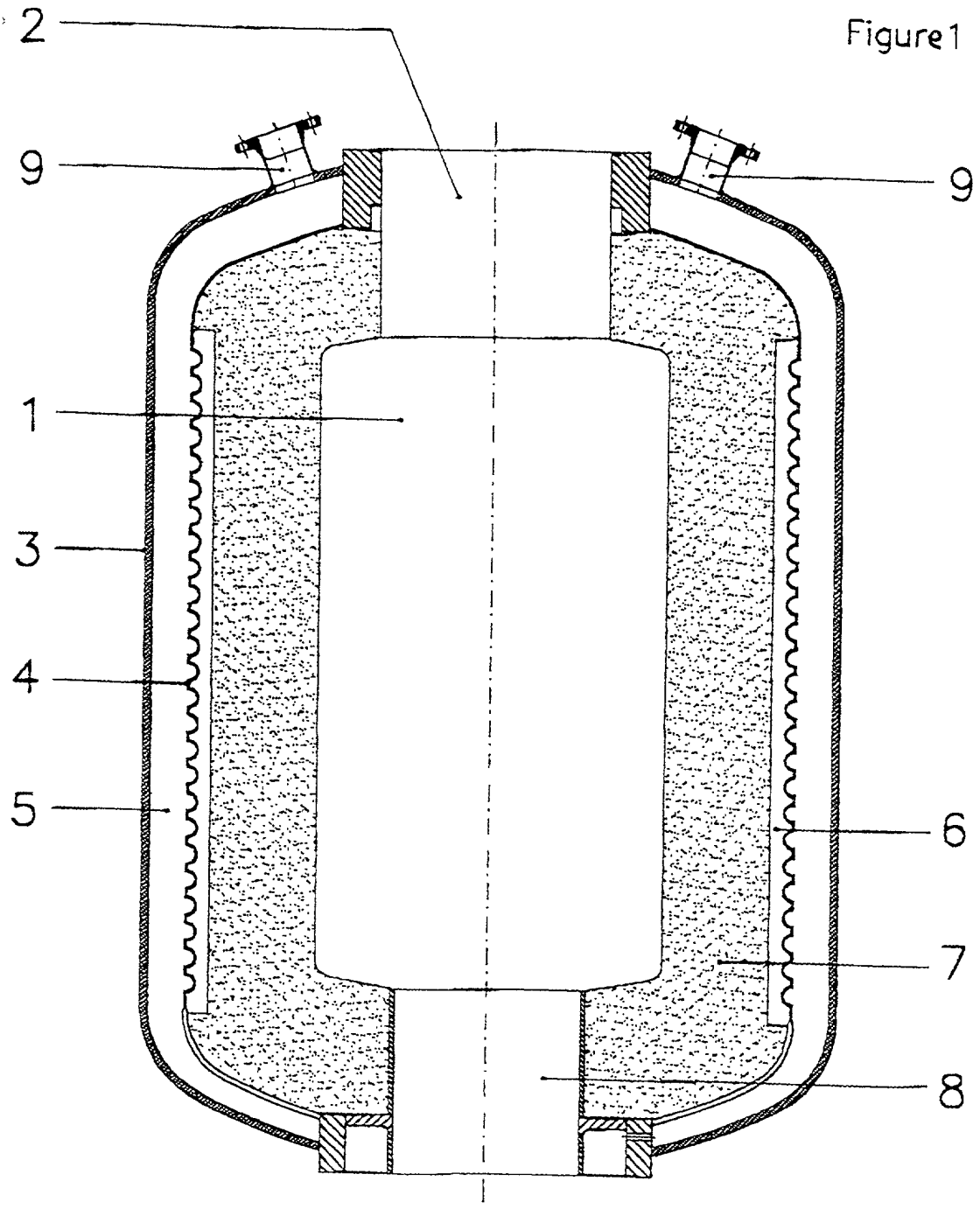
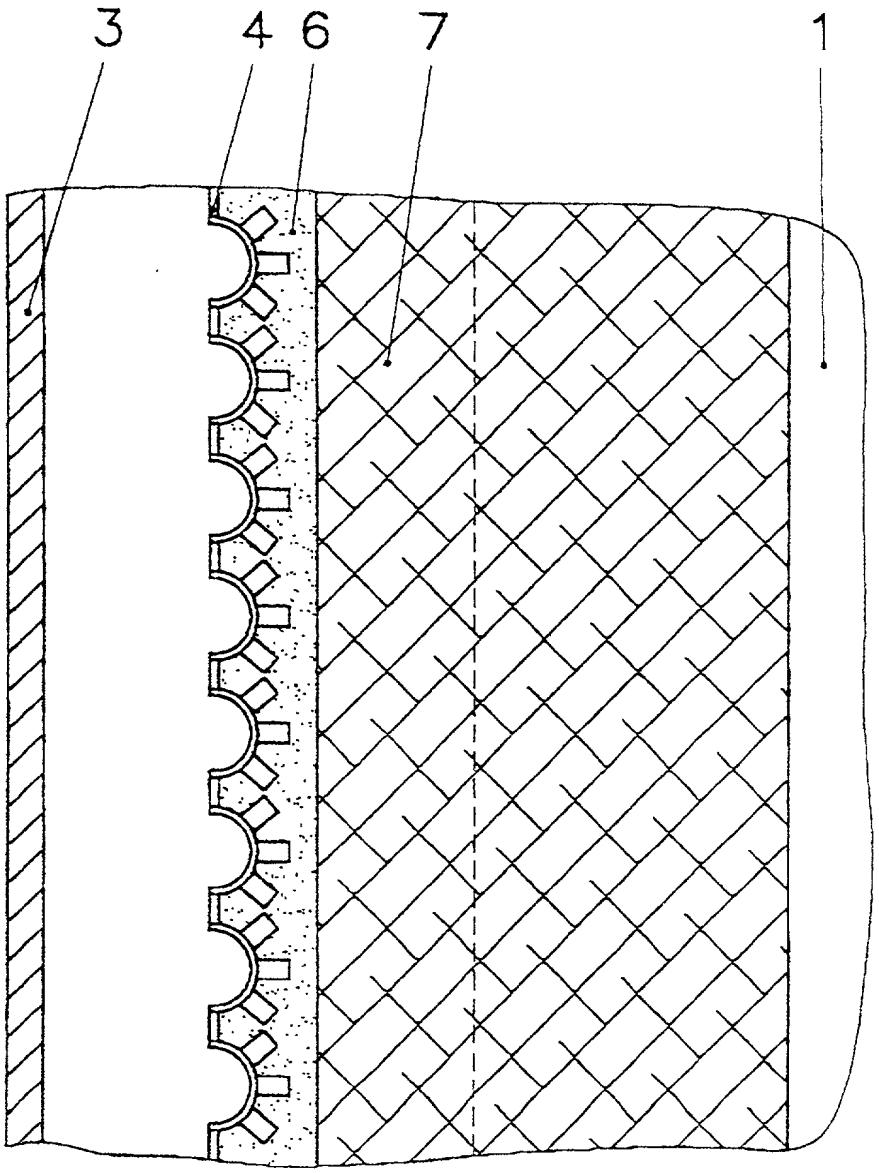


Figure 2



By Express Mail
No. EL513859785US

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY Includes Reference to PCT International Applications	Attorney's Docket No. 4797-6PUS

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VORRICHTUNG ZUR VERGASUNG VON KOHLENSTOFFHALTIGEN BRENN-, REST- UND ABFALLSTOFFEN

the specification of which (check only one item below)

[] is attached hereto

[] was filed as United States application

Serial No. _

on _

and was amended

on _ (if applicable).

[x] was filed as PCT international application

Number PCT/DE98/01995

on 16 July 1998

and was amended under PCT Article 19

on _ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of the application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

PRIOR FOREIGN/PCT APPLICATIONS AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

Country (if PCT, indicate "PCT")	Application Number	Date of Filing (day, month, year)	Priority Claimed Under 35 U.S.C. 119	
Germany	198 29 385.2	01 July 1998	[x] YES	[] NO
PCT	PCT/DE98/01995	16 July 1998	[x] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO
			[] YES	[] NO

Combined Declaration for Patent Application and Power of Attorney (Continued) (Includes Reference to PCT International Applications)	Attorney's Docket No. 4797-4PUS

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

U.S. APPLICATIONS		STATUS *(check one)*		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED

PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED *(if any)*			
PCT/DE98/01995	16 July 1998				

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (*List name and registration number*)

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Combined Declaration for Pa 212 4212255 **r of Attorney (Continued)**
(Includes Reference to PCT International Applications)

Attorney's Docket No. 4797-8PUS

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 01/01/2000	DATE 12/23/1999	DATE 12. 23. 99